

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION

LAMMERS BARREL PRP GROUP,	)	CASE NO. 3:17-cv-00135-WHR
)	
Plaintiff,	)	JUDGE WALTER H. RICE
	)	MAGISTRATE JUDGE SHARON L.
v.	)	OVINGTON
)	
CARBOLINE COMPANY, <i>et al.</i>	)	ETC SUNOCO HOLDINGS, LLC
	)	F/K/A SUNOCO, INC.'S AND
Defendants.	)	CARBOLINE COMPANY'S
	)	MOTION <i>IN LIMINE</i> TO EXCLUDE
	)	OPINIONS OF PLAINTIFF'S
	)	EXPERTS

**Exhibit A – Excerpts from the Expert
Report of Matthew Low**

**EXPERT REPORT ON ALLOCATION WITH RESPECT TO THE LAMMERS
BARREL SITE**

MATTHEW A. LOW

April 27, 2018

portion of over \$9 million in past and estimated future response costs from the following non-settling defendants:

- **Carboline Company (“Carboline”)** or alternatively, **Sunoco, Inc. (“Sunoco”)**, as the successor to Moran Paint, which owned the property 1948-1951 and operated a paint manufacturing plant at the Site from 1948 to 1952, when it sold the property and moved its operations. After it moved its operations, Moran Paint sent solvents to the Site to be reclaimed. Thus, Moran Paint’s liability under CERLA is as a Generator as well as an Owner/Operator.
- **Dayton Industrial Drum, Inc. (“Dayton Industrial Drum”)**, as the successor to Lammers Barrel Corporation, which was established as part of the ongoing Kohnen-Lammers solvent recovery business in order to conduct barrel reconditioning operations at the Site. It conducted operations at the Site from about 1955 until about 1964. Thus Dayton Industrial Drum’s liability is as an Owner/Operator.
- **NCR Corporation (“NCR”)** as a customer of the solvent reclamation or barrel reconditioning operation (“Generator”)
- **Worthington Industries (“Worthington”)** as a customer of the solvent reclamation or barrel reconditioning operation (“Generator”)
- **Yenkin Majestic Paint Corporation (“Yenkin Majestic”), successor to Majestic Paint**, as a customer of the solvent reclamation or barrel reconditioning operation (“Generator”)

My understanding is that each of these entities has received General or Special Notice Letters from EPA informing them that they are PRPs at the Site and each of them has elected not to cooperate with settling parties in the investigations or remedial actions undertaken at the Site.

Allocation in a contribution case under CERCLA entails consideration of various facts and applying relevant equitable allocation factors to them. A number of allocation factors have been considered by courts in the numerous cases that have been decided under CERCLA, and there is no single set of factors that can be said to apply in every case.

While my opinions are a product of my experience, I recognize that, ultimately, the Court will make findings of fact and equity in reaching its allocation decision. I am mindful that it is the province of the Court to decide which equitable factors are applicable and how they should be applied. My opinions are intended only to assist the Court.

for the possibility that site remediation costs will be higher than estimated costs. In return, these parties are essentially let out of case and under the law, receive protection (or indemnification) from actions by any other parties, including EPA. These parties are sometimes referred to as “settling non-performing parties” in order to distinguish them from performing parties – those parties who have agreed to perform the further investigation and remedy pursuant to agreement with EPA.

- 32 cases as an arbitrator or mediator, seven of which were court-sponsored assignments and one of which was an EPA Pilot Allocation Project;
- 63 cases as a settlement counselor, consultant or expert for private parties and the government – many of the cases involve multiple sites.

I have testified at trial as an expert in district court CERCLA allocation cases four times³¹ and have testified in court for settlement hearings or other matters six times.³² I have had my testimony excluded in one case, the court finding that while I took great care in grounding my analysis in objective fact, my opinion ultimately addressed application of equitable issues that were properly addressed by the Court.³³ I have written three publications regarding CERCLA allocation or arbitration and one EPA manual regarding investigating potentially responsible parties at hazardous waste sites.

The majority of cases on which I have worked are major manufacturing sites or industrial waterways that have been contaminated by numerous manufacturing and commercial operations. These cases typically require an analysis of the response actions necessary to address contamination at the sites in question and the involvement of responsible parties – including owners and operators – in contributing to the contamination being addressed.

I am serving or have served as a settlement counselor to the U.S. Department of Justice on forty (46) cases, most involving one or more large manufacturing sites, in which government involvement as an owner or operator has been alleged during certain periods, including World War I and World War II. A number of these cases involve multiple plants (e.g., DuPont – 12 separate plants; GM – 5 separate plants). I have worked on six cases involving the production of uranium-based nuclear fuels and other nuclear materials in support of the Navy nuclear reactor program during the 1950s, 1960s and 1970s. My role as a settlement counselor is to develop an allocation analysis that deals with the panoply of issues relating to sites that are being remediated and to provide objective opinions and advice to the DOJ during discussions, negotiations and mediation with the private party claimants. The work I have done for DOJ has been primarily oriented toward achieving settlements and generally has been successful in promoting settlements on allocation issues. Twenty-eight (28) cases on which I have worked for DOJ have settled based, at least in large part, on my allocation frameworks or analysis. Thirteen (13) cases are currently in some stage of negotiations without any filed litigation. One case went to litigation on the interpretation of a specific contract clause. I am serving as an expert witness for

³¹ Junker Landfill, Roebling Steel Superfund Site, Metcoa Superfund Site, Whittaker-Bermite Site.

³² I testified regarding allocation assumptions for Arrowhead Refinery Superfund Site; presented allocation framework to special master for Warwick Landfill Superfund Site; testified in East Bethel Landfill settlement hearing; testified in Berks Associated Superfund Site matter as a neutral to outline an allocation process that was adopted by the Court; testified in District Court on hazardous substances and CERCLA liability in *W.R. Grace v. Zotos International*; and testified regarding an allocation database in *Abex*. During the past four years, I have been deposed in two cases, the Exxon and Shell matters.

³³ *New York v. Westwood-Squibb Pharmaceuticals, Inc.*, Civ. No. 90-CV-1324, 2001 U.S. Dist. LEXIS 11765 (W.D. N.Y. June 23, 2001)

DOJ in two other matters at the present time. In 2012, I served as an expert for DOJ in the Whittaker-Bermite matter.

I am being compensated at a rate of \$300 per hour for work on this case.

II. ALLOCATION UNDER CERCLA

A. Equitable Factors

Under CERCLA, parties who have expended cleanup costs at hazardous waste sites may seek contribution or cost recovery from other responsible parties. The use of equitable allocation factors is the primary basis for apportioning liability in contribution actions under CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. The legislative history of CERCLA and certain of its provisions support the use of equitable factors to apportion liability in contribution actions. “[T]he court may allocate response costs among liable parties using such equitable factors as the court determines are appropriate.” CERCLA Section 113(f)(1); 42 U.S.C. 9613(f)(1). Courts throughout the nation, and potentially responsible parties, during the course of consensual settlement negotiations, have relied on equitable factors to serve as a guide for allocation at CERCLA Sites. *See U.S. v. R.W. Meyer, Inc.*, 932 F.2d 568, 572 (6th Cir. 1991). I have relied on equitable factors in my work as an arbitrator, mediator and expert witness in cases where allocation is at issue.

B. Gore Factors

There are six factors set forth in the 1980 amendment to CERCLA offered by then-Representative Al Gore. Although this amendment was never enacted into law, numerous courts have held that these factors (often referred to as the “Gore factors”) provide a logical starting point for allocation in cost recovery and contribution cases. The Gore factors are:

- i. The amount of the hazardous substances involved;
- ii. The degree of the toxicity of the hazardous substances involved;
- iii. The ability of the party to demonstrate that its contribution to a discharge, release or disposal of a hazardous substance can be distinguished;
- iv. The degree of involvement by the party in the generation, transportation, treatment, storage, or disposal of the hazardous substance;
- v. The degree of care exercised by the party with respect to the hazardous substance concerned, taking into account the characteristics of such hazardous substance; and
- vi. The degree of cooperation by the party with federal, state, or local officials to prevent any harm to the public health or the environment.

See, e.g., United States v. A&F Materials Co., Inc., 578 F.Supp. 1249, 1256-1257 (S.D. Ill. 1984).

In addition to the Gore factors, Courts recognize that other factors may be relevant in different cases. Each case is treated individually, and no preset allocation methodology or formula, or set of allocation factors, is used in every case. “No exhaustive list of criteria need or should be formulated.” *U.S. v. R.W. Meyer, Inc.*, 932 F.2d at 572. Additional factors that have been relied on include economic benefit and degree of knowledge. Where portions of a site can be geographically divided, only parties responsible for contributing contaminants to a particular location should be attributed a share for remediation of that location.³⁴ The difference in benefits accruing to the respective allocation parties from historical and future use of the site or facility in question may, in some cases, be a relevant consideration. To the extent that the degree of knowledge about the impacts of various activities provide a basis for materially distinguishing between the parties, this factor also may be relevant. Generally, certain factors, such as degree of knowledge, care, cooperation and benefits are difficult to quantify. If they are considered at all, they generally are considered in a qualitative sense.

Notwithstanding this litany of factors, in my experience, the objective of the allocation analysis is to allocate response costs on some reasonably fair basis to those parties that have been involved in activities that have impacted the incurrence of response costs.³⁵ In cases, such as solvent and metals reclamation, drum reconditioning, and landfills, which involve both Owner/Operators and Generators, Owner/Operators are typically assigned a relatively large share, at least 50% and even greater *vis a vis* Generator when the contamination was caused by the Owner/Operators’ actions. The following cases illustrate allocations of 50% or greater to Owner/Operators in cases which also involved allocations to Generators:

<u>Title Citation</u>	<u>Owner/operator share</u>
<i>Gould v. A&M Battery</i> , 987 F. Supp. 353 (1997)	75%
<i>American Cyanamid v. Nascolite</i> , 1995 WL 934871 (1995)	85%
<i>Amoco v. Dingwell</i> , 690 F. Supp. 78	65%
<i>Browning Ferris v. Ter Maat</i> , 13 F. Supp. 2d 756	50%
<i>Advance Circuits. v. Carriere</i> , C8-87-1436, 1998 Lexis 118	70%

A number of the above decisions highlighted the Owner/Operators’ comparative lack of cooperation as one factor in assigning a higher than 50% share to them. (*Amoco v. Dingwell*; *Advance Circuits v. Carriere*).

³⁴ See, e.g., *Hatco Corporation v. W.R. Grace & Co.*, 836 F. Supp. 1049, 1059 (D. NJ 1993) vacated and remanded on other grounds, 59 F.3d 400.

³⁵ See *Hatco*, supra. (“The causation inquiry begins with an attempt to identify the party who introduced contamination to the Site.”); *Boeing Company v. Cascade Corporation*, 920 F. Supp. 1121, 1136 (D. Ore 1996) (“...the respective harm to the environment is best reflected by the mass of contaminants each contributed to the TSA plume”).

III. GENERATOR ALLOCATION

A. Overview of Allocation Considerations

As indicated above, in 2012, I performed an allocation analysis that resulted in a number of Generator parties settling their liabilities with EPA. For the purpose of this report, I have adopted the analysis I performed in 2012 and the resulting Generator allocation percentages produced by that analysis.³⁶ The explanation provided in this Section is drawn from the reports and spreadsheets submitted to EPA that supported the settlements agreed to by EPA. The supporting spreadsheets are contained in Appendix 1 to this report, labeled according to the Attachment number as submitted to EPA.

In my experience the starting point for a Generator allocation in this type of case is determining the relative volume of materials sent to the Site attributable to each Generator. Calculating the volume sent to the Site in this matter entailed first analyzing evidence relating to 50 individual facilities associated with the 38 Site Group Members. When the allocation was expanded, analysis was conducted for 41 additional Non-Members, including Moran Paint, NCR, Worthington and Yenkin Majestic. With the exception of the post-1969 fire insurance claim records, which exist for a minority of the facilities associated with the Generators, and some records produced by a few of the Generators, the evidence on volume comes from deposition testimony. I have described the methodology for these calculations below.

Once the volume of material sent to the Site by each Generator was calculated, the next step, incorporating either equitable considerations or litigation risk, was to determine whether there were sufficient grounds for adjustments to calculated volume that would create a more equitable distribution among the parties – including adjustments that would result in a zero share for some parties. Such grounds typically include the accuracy of the volume estimates, the nature of the materials sent to the Site, the type of treatment afforded to the materials sent to the Site (and potential for such treatment to release contaminants at the Site) and other issues impacting the equitable responsibility of the various Generators.

Factors that I considered in determining whether adjustments to calculated Generator volumes were merited included:

1. Whether materials attributed to Generators may have included contaminants that are contributing to unacceptable health risks at the Site and, therefore, are “driving” the need for a remedy at the Site, commonly referred to as “Remedy Drivers.”
2. The reliability of identification of Facility allegedly associated with a named Generator
3. Presence of materials on the Site at the time of the 1969 Fire – which may have made it more likely that they would have been released during the fire
4. The potential applicability of the Petroleum Exclusion – a provision of CERCLA that excludes petroleum products from the definition of “hazardous substance,” thereby absolving Generators of such products from liability under CERCLA
5. Contents of materials sent to Site being clean (as opposed to spent) solvents

³⁶ As discussed further below, I made one minor correction to the Generator allocation percentage for NCR.

6. Yield return on materials reclaimed – as a means of accounting for materials sent back to the Generators (and therefore, which should not be counted in any comparative volume estimations).

As further explained below, taking into account these factors, I calculated Adjusted Volumes that formed the basis of my allocation recommendations in 2012, which I am adopting for the purpose of this report.

B. Volume Calculations

The primary basis for the overall volume estimates for Generators associated with the reclamation operation is the testimony of Anthony Kohnen. Mr. Kohnen was the co-owner of the Kohnen-Lammers solvent reclamation business and the Lammers Barrel Corporation drum reconditioning business. Other records, such as a log of customer fire insurance claims³⁷ and check or billing receipts produced by a few Generators, merely provided snapshots in time, although I relied on them where appropriate to assess the accuracy of volumes stemming from Mr. Kohnen's testimony.

Prior to my involvement, the EPA had developed and made available a waste-in list that was generated using a protocol that prioritized the 2003 Rule 27 deposition testimony of Mr. Kohnen over a 2001 Administrative deposition of Mr. Kohnen and written exhibits to his testimony that Mr. Kohnen had created to memorialize his recollection of the nature of various customers' course of dealing with his business. The main exhibit in which Mr. Kohnen set forth his recollections of customers and estimates of the volume of materials sent to the Site was Exhibit 7 (including 7A)³⁸ to his Rule 27 deposition. In its waste-in list, EPA made allowances to account for situations where Mr Kohnen's recollection was refreshed on cross examination by reference to Exhibit 7. The result of using this protocol was an uneven distribution, depending on who was asking the questions during the Rule 27 deposition and which of the three key volume parameters (size of load, frequency of shipments, or number of years) were the focus of the examiner's questions.

Based on my review of Mr. Kohnen's testimony, I concluded that he knew what he was talking about and had a pretty good and generally reliable recollection of most of his customers including impressive knowledge of their operations. However, his testimony appeared to be less reliable on the key volume parameters (years as a customer, frequency of shipments per year, volume in each shipment), as evidenced by some notable inconsistencies between his Administrative deposition, Exhibit 7, and his Rule 27 deposition. EPA's primary reliance on Kohnen's Rule 27 deposition seemed to be predicated on its view that the Rule 27 deposition was noticed and would be admissible in court, inasmuch as parties were provided an opportunity to cross-examine him, and that the Administrative deposition would not be admissible. However, for purposes of reaching a fair settlement, I concluded that the proper course was for

³⁷ Exhibit 6 to Kohnen R27 Deposition.

³⁸ Exhibits 7 and 7A are identical except for some added handwritten notes about the nature of the materials in drums from various customers. For the purpose of this report, I have referred to Exhibit 7.

the totality of the testimony to be taken into account, including Kohnen's Administrative deposition and, in particular, his Exhibit 7.

At his Administrative deposition, Kohnen demonstrated that he knew a lot about his customers and, in many cases, had some basis for his volume parameter estimates. In collaboration with his attorney, his recollections as of 2002 were memorialized in Exhibit 7. During the Rule 27 depositions, the questions differed in a variety of respects generally taking the form of the following scenarios:

- If a party was present, and the Rule 27 testimony was more favorable than Exhibit 7, the party would not press Kohnen to explain the inconsistency with Exhibit 7,
- If a party was present, and the Rule 27 testimony was less favorable than Exhibit 7 on one or more volume parameters, the party would refer Kohnen to Exhibit 7 and ask if Exhibit 7 was his best recollection on the parameter(s) in question. When asked, Kohnen invariably stated that Exhibit 7 was his best recollection.
- If a party was not present and the Rule 27 testimony was more favorable to that party for one or more volume parameters, the common counsel representing a number of Site Group members would refer Kohnen to Exhibit 7 and ask if his recollection of that parameter was his best recollection – in most cases by asking a leading question. When asked, Kohnen invariably stated that the volume parameter as set forth in Exhibit 7 was his best recollection.
- If a party was not present and the Rule 27 testimony was less favorable to that party for one or more volume parameters, there would be no further follow-up.

As I read Kohnen's Rule 27 deposition, I found virtually no basis for the changes in his testimony on volume parameters from his Administrative deposition or Exhibit 7, and, accordingly, I saw no basis for concluding that his recollections in 2003 (Rule 27 deposition) are any more reliable than his recollections in 2001 (Administrative deposition) or 2002 (Exhibit 7). As the Rule 27 depositions proceeded, he seemed to tire, his responses seemed to grow shorter and he seemed more malleable. The number of objections raised and the colloquies among attorneys also seemed to get in the way of a clean record in certain spots. But, in the end, if asked, Kohnen virtually always fell back on the volume related parameters in Exhibit 7. So, the import of Kohnen's overall Rule 27 testimony ultimately depends on who was present and whether or not he was asked to refer to Exhibit 7.

Whether Exhibit 7 is the most reliable evidence of these volume parameters cannot be known. But given the use to which Exhibit 7 was put during his Rule 27 deposition, I believed that it would be a key piece of evidence at trial, at the very least, along with his Administrative deposition, for impeachment purposes. Exhibit 7 appeared to be sufficiently authenticated to come in as stand-alone evidence, although I am mindful of the objections that would be raised about the way it was created. But, since it was ratified by Kohnen on multiple occasions during his deposition, I think it is important to consider it even if it was not brought up by or for a particular party during the deposition. Similarly, since Exhibit 7 was created based, in part, on

his Administrative deposition, I believed that the Administrative Deposition also should be considered if it deviated in any meaningful way from either Exhibit 7 or the Rule 27 deposition.

For the above reasons, in my opinion, it was appropriate to use the totality of the record of Kohnen's statements and Exhibit 7. Accordingly, I created a **Volume Calculations** worksheet (Attachment 2) that denotes, for each Generator, and for each of the three volume parameters, Kohnen's statements from his Administrative deposition (Adm), Exhibit 7 (Ex 7), his initial Rule 27 testimony (R27), and any cross examination (Cross) by either the Group Member or by common counsel. I then calculated the volume based on some combination of this evidence. The Volume Calculation worksheet contains an explanation for the calculations for each of the Generators. In the majority of cases, I averaged the Exhibit 7 and Rule 27 testimony. In cases where the Administrative deposition differed in some material respect from Exhibit 7, I incorporated that testimony as well, sometimes averaging the parameters from the Administrative deposition, Exhibit 7 and the Rule 27 deposition. Where the volume calculated from the Administrative deposition differed substantially from Rule 27 testimony, I gave it less weight, as explained in the Explanation column of the **Volume Calculations** worksheet.

With respect to empty drums sent for reconditioning, I relied primarily on the Rule 27 deposition testimony of Cecil Brown for volume parameter calculations (size of load, frequency, number of years). Mr. Brown began work at the site in 1954 as a handyman at the solvent reclamation business and then went to work at the drum reconditioning business when it began operating. He ultimately became production supervisor of the drum reconditioning operation. I found Brown's testimony to be incomplete in certain respects on the frequency of shipments over the time period of barrel reconditioning operations at the Site. He seemed pretty clear that a semi-trailer was not purchased until right before the barrel reconditioning operation's move off the Site, thus capping the load size at 170 drums during the period the business was located at the Site. Brown's Administrative deposition suggests a much greater frequency than does his Rule 27 testimony, but, unfortunately, there was no follow-up or attempt to reconcile these differences during his Rule 27 deposition. In line with my view that all of the record should be considered in some way, I believed it was appropriate to consider the volume parameters stemming from Brown's Administrative deposition, weighing the Administrative deposition 25% and the Rule 27 deposition 75%.³⁹

On the amount of residual material in the drums, Brown said it was a pint, Kohnen said it amounted to a half a pint to a pint, and EPA settled on a pint, or 1/8 of a gallon, for its waste-in calculations. Brown stated that he saw drums with up to 10 gallons at times before new laws were enacted on how much residual material could be in a drum in order for it to qualify as an empty drum.⁴⁰ Federal regulations adopted in 1980 under RCRA defined "empty" for the purpose of determining when a drum contained hazardous wastes. But there were no follow-up questions on what Brown was referring to or whether drums from various Generators may have,

³⁹ I note that Brown's Rule 27 deposition testimony on frequency was consistent with the frequency indicated by BP in its 104(e) response (monthly collection of about 100 product drums at the Dayton Terminal).

⁴⁰ Brown R27 Deposition at p. 139.

at times, contained more than a pint of residues. For my volume calculations, I continued to use the multiplication factor (1/8 of a gallon per drum) relied on by EPA.

C. Volume Adjustment Factors

As noted above, after calculating the volumes of materials sent to the Site, I applied adjustment factors to take into account various equitable, legal and technical factors. I have employed this methodology frequently developing allocation recommendations in similar types of solvent reclamation and drum reconditioning sites. Attachment 3, **Volume Adjustment** worksheet, shows the multipliers that were used to derive the adjusted volumes calculated in Attachment 2, **Volume Calculations** worksheet (as explained below). The multipliers are shown for each factor and were used in recalculating the adjusted volume. Attachment 3 also indicates which Group Members' volumes received each particular adjustment. The rationale for these adjustment factors is described below.

1. Remedy Drivers Adjustment

The results of the investigation and Record of Decision point to certain contaminants that appear to be causing the need for remediation – often referred to as “remedy drivers.” The remedial objectives for the Site are centered on specific contaminants meeting certain concentration limits. For soils Preliminary Remediation Goals (“PRGs”) were established for:⁴¹

Benzo(a)pyrene
Dibenzo(a,h)anthracene
Indeno(1,2,3-cd)pyrene
Tetrachloroethylene (PCE)
Trichloroethylene (TCE)
Vinyl Chloride
Total PCBs
Arsenic

The first three compounds on the list are known as PAH compounds and are products of incomplete combustion (possibly associated with incineration of drums as part of the drum reconditioning operation or the 1969 fire of the solvent reclamation operation, or the 1952 fire of the Moran Paint operation across Patterson Road from the southern border of the Site). These compounds were detected in elevated concentrations only in a small area on the southeastern portion of the Site.⁴² PCE, TCE and their degradation products such as vinyl chloride, are known as chlorinated solvents or volatile organic compounds (“VOCs”)

For groundwater PRGs were established for:⁴³

⁴¹ Lammers Barrel Superfund Site OU-1 Record of Decision September 2011. (“ROD”) at p. 16.

⁴² ROD, Attachment 2, Figure 11.

⁴³ ROD at p. 17.

TCE
 Cis-1,2-DCE
 Vinyl Chloride
 Benzene
 Ethylbenzene
 Xylenes
 Arsenic

In reviewing the record, it appears that none of the Generators in this case produced sampling or analysis of the contents of their facility's drums or bulk shipments that were sent to the Site. One Generator's 104(e) Response includes documentation that it received a proposal from Lammers to purchase dirty TCE in 1971, after the operation was no longer on the Site. But there is no indication that this Generator ever sent dirty TCE to the Site either before or after the operation moved from the Site. Kohnen stated "TCE" in response to a question relating to the drum contents of one other Generator facility that was allegedly involved in manufacturing jet engine parts.⁴⁴ Benzene, Ethylbenzene, Toluene and Xylenes, also known as BTEX compounds, are generally associated with residual fuel and oil compounds in the empty drums sent by oil company distributors to the Site but also may have been in other aromatic compounds sent to the Site or in solvents used in paint operations.

I found that, from the available evidence, it could not be conclusively demonstrated that the materials in the Generators' drums included the above compounds, or remedy drivers. The evidence, such as it is, consists primarily of the fire claim spreadsheet and supporting correspondence, a few affidavits or transactional documents submitted by Generators, and the testimonial descriptions by Kohnen. Actual analytical data on the drums or operational information on whether chlorinated solvents or BTEX compounds were used in any of the Generators' company operations is not in the record. Ultimately, I concluded that there was not enough hard and fast evidence for me to comprehensively and fairly identify parties whose drums were likely to have contained the key remedy drivers (PCE and TCE) or secondary drivers (BTEX compounds, PAHs, PCBs or arsenic) or to exclude parties whose drums conclusively did not. To account for the limited litigation risk that I believed was present in the case, where there are indications that these chemicals may have been associated with materials sent by a party to the Site, I applied a slight increase to the calculated volume (multiplier of 1.2 in the case of TCE and 1.1 for fuel/oil).⁴⁵ Neither of these upward adjustments was applied to the defendant Generators in this case.

2. Potential Misidentification Adjustment

In a few instances, it appeared possible that the entity identified by Kohnen and allegedly linked to them was not associated with them or not correctly identified – i.e., the entity's name is not sufficiently similar to an entity to which they were linked, or Kohnen's identification of the

⁴⁴ However, there was no follow-up or a establishing of any foundation as to how he knew it was TCE.

⁴⁵ This TCE adjustment factor was applied to a single Generator and the BTEX adjustment factor was applied to three oil company Generators.

entity was not based on his personal knowledge. I evaluated these arguments, and concluded that, in four instances, the identification of a customer by Mr. Kohnen was somewhat uncertain. To these four Generators I applied a 30% discount (a 0.7 multiplier) to take into account the possibility that Mr. Kohnen's testimony identifying the party as a customer was inaccurate. This downward adjustment was applied to the NCR Dayton facility because Mr. Kohnen was not consistent in his recollection of whether the Dayton facility was or was not a customer.

3. Presence of Materials on Site at Time of Fire Adjustment

The fact that claims were submitted after the fire for facilities associated with 16 Generators demonstrated that they believed that their materials were on the Site at the time of the 1969 fire. It is possible, then, that the fire more likely resulted in releases of the contents of those drums at the Site. So one issue was whether these 16 Generators should assume a larger, disproportionate, share of the Site costs because of the likelihood that a greater percentage of the contents of their drums may have been released.

EPA's technical studies and ROD have repeatedly stated that the quantity and specific chemicals released during the fire are unknown. Fact sheets issued by the Agency have stated that: "Presumably, any on-site chemicals are likely due to the Lammers operation or releases from the September 1969 fire. These chemicals have migrated to the soil and ground water."⁴⁶ Logically, it would seem that the fire had some impact on Site conditions, whether through releases of contaminants into soil or the creek or by exacerbating migration of contaminants already present in soils, but the extent is unknown. As noted above, EPA also has noted that there were up to 6,000 drums and up to 500,000 gallons of storage capacity at the Site prior to the fire, meaning that there may have been many more drums, and much more material on the Site than reflected in the fire claim records.⁴⁷

The descriptions of the contents of the 16 Generators' drums do not, on their face, include specific reference to remedy-driver chemicals, although, the descriptions do not rule out the possibility that some of the drums may have contained these constituents. One entity on the list, not a Group Member, submitted a claim for 50 drums of "Trichlor." One Group Member's material was denoted as Toluol, now known as toluene. However toluene, although a BTEX compound, is not among the chemicals for which EPA has established a cleanup level. Some of the descriptions are fairly generic (e.g., "wash solvents," "wash blend"), or are vague ("L-3 Solvent," "R-2 Solvent"). Given the lack of evidence concerning releases into soil or groundwater (as opposed to consumption in the flames), and the fact that evidence on the presence of target chlorinated solvents or BTEX compounds is lacking, I concluded that the 16 Generators who submitted insurance claims after the fire should not bear an overly disproportionate share of the Site costs. However, in recognition of the higher likelihood of

⁴⁶ "Any contamination at the site prior to the 1969 fire is unknown because no previous environmental investigations had been conducted. When the Lammers Barrel facility burned to the ground in September 1969, chemicals at the site moved into the soil and ground water (underground supplies of fresh water). Any prior inventories of chemicals handled at the facility were reportedly destroyed in the fire." April 2010 EPA Response to Community Questions.

⁴⁷ February 2012 EPA Fact Sheet. This would mean that the drums of other Generators may also have been present.

releases during the fire, I adjusted the volume for these parties by increasing just the volume reflected in the fire claim records by 25%.⁴⁸ This upward adjustment was not applied to any of the four defendant Generators in this case.

4. Petroleum Exclusion Adjustment

The three Oil Company Group Members of the Site Group advocated for an adjustment based on applying the petroleum exclusion to the residual contents of the empty barrels attributed to them. This argument is largely based on the nature of the operations (distribution, rather than manufacturing) and the testimony of Brown that the residue in the drums was just oil – from cleaning out distribution lines. By contrast, Kohnen testified that the contents of drums sent for reconditioning included oils and solvents.⁴⁹ BP's 104(e) Response indicated that its Dayton Terminal stored customers' products (including starter solvent, anti-freeze, motor oil, and paint thinner). Based on the record as it currently existed at the time of my analysis, I did not believe that it was likely that the oil companies would be able to demonstrate the applicability of the exclusion. However, in recognition of a small likelihood that they could so demonstrate the applicability for some portion of the drums, I included a 10% discount (0.9 multiplier) as part of the volume adjustment. My understanding is that the three oil company Generators accepted the shares that were allocated to them and settled their liabilities with EPA. This downward adjustment was not applied to any of the four Generator defendants in this case.

5. Yield Percentage Adjustment

One issue concerned the disparity between empty drums sent for reconditioning (counted as 1/8 a gallon) and drums sent for reclamation (counted as 55 gallons by EPA). Because of the nature of the solvent reclamation business, not every gallon into the Site for reclamation should be treated as waste – or considered to have a potential to be released -- since most of the gallons would be returned as reclaimed solvents to the original Generator or otherwise sold to a third party. By contrast, any residual in the empty drums was washed out on the Site and, if not collected, could have been released on the Site. To address this, I applied an adjustment factor to drums sent for reclamation to account for the fact that much of the contents of the drums wound up being returned to the originator or otherwise sold after processing (and therefore would not have been released). The yield percentages calculated from the fire claim log are with one exception 90 or 91%. As a conservative estimate, I assumed an 80% yield and applied an adjustment factor of 0.2 (multiplying the calculated volume of materials sent for reclamation by 20% -- 0.2 -- to derive the adjusted volume). This significant adjustment was applied to the majority of Generators in this case, including each of the four defendant Generators.

⁴⁸ Thus, for example, if the fire claim volume is 10,000 gallons, the calculated adjusted volume would be increased by adding $10,000 \times .25$, or 2,500 gallons to the total adjusted volume. If the calculated volume from the testimony and other adjustments were 20,000 gallons, the resulting total is 22,500 gallons.

⁴⁹ On cross examination, Kohnen stated that this was based on his personal knowledge of seeing “empty” drums leaking as they lay on their sides on the conveyor belt. But he conceded that he wouldn't know whether it was one or the other -- oil or solvents

6. Clean Solvents Adjustment

Testimony indicated that clean solvents generated from flushing product distribution lines were handled somewhat differently by the reclamation operation – bypassing the thin film evaporator process necessary to distill out heavy ends and waste products. Given that the process likely would not have resulted in significantly fewer opportunities for spillage or waste generation, I applied a modest discount (0.9 multiplier) to the volumes of those Generators whose drums appear to have contained this type of material. This adjustment was not applied to any of the four Generator defendants in this case.

7. “Purchased Solvents” Adjustment

Based on the testimony of Kohnen and other materials in the record, it appeared that Kohnen-Lammers occasionally purchased solvents, not for reclamation and recovery, but for either resale or as blending agents. These purchased materials were not reclaimed by Lammers, and would be less likely to generate waste than solvents sent through the recovery process. I found that the evidence demonstrated that solvents were purchased from Eli Lilly and Ashland and, accordingly I applied a 25% discount (*i.e.*, a 0.75 multiplier) to the unadjusted volumes for these two Generators. This adjustment was not applied to any of the four Generator defendants in this case.

D. Incorporation of Per Capita Component

Given the overall uncertainty in deriving the adjusted volumes (arising from both evidentiary uncertainty and my application of the adjustment factors), I concluded that it was appropriate to compress the percentage somewhat by incorporating a per capita component, so that the Generators with the highest volumes were given a slightly reduced percentage and the parties with lower volumes were given a slightly higher percentage. A per capita component also takes into account the burden to address the conditions at the Site that is born by all parties regardless of their relative volumetric contribution to the site. I have used this methodology in a number of similar types of cases where evidence was uneven and uncertain, in order to mitigate the impact on those parties for which more information is available.

My understanding at the time my report was written was that total costs to date for OU 1 and OU 2 investigations were about \$10,000,000, with approximately \$500,000 of that in legal/administrative costs and \$1,000,000 in EPA oversight costs (which have already been paid). On that basis, I used 15% (\$1.5M/\$10M) as the approximate amount for which it would be appropriate to apply a per capita share. I divided that percentage by the number of Generators in the allocation – resulting in a 0.20% per capita share for all parties. To this base per capita share, I then added the adjusted volume share multiplied by 0.85). In my opinion, this produced a more even compression – higher at the top and bottom, and approaching no compression in the very middle.⁵⁰

⁵⁰ As a result of applying the per capita component, for example, the Generator percentage for Moran Paint was reduced from 7.98% to 6.98%.

E. Summary and Recommended Generator Allocation

Attachment 1, **Allocation** worksheets contain the Generator allocation percentages, both alphabetically, and in descending order by percentage, that I recommended based on my 2012 analysis.

As discussed above, my analysis in 2012 was based on what I believed then to be a fair appraisal of the evidence. The methodology I used to calculate volume and the adjustment factors that I applied to the calculated volumes were, in my opinion, a reasonable means of reconciling various equitable allocation positions within the constraints of a limited and uncertain record. My objective was to incorporate certain adjustment factors, but not make them so decisive as to overly skew the allocation for or against any particular Generators.

F. Generator Percentages for Moran Paint, NCR, Worthington, and Yenkin Majestic Paint

Using the methodology that I applied to all other Generators, I calculated the volumes Generator defendants as follows:

1. Yenkin Majestic

Exhibit 7 of Mr. Kohnen's Rule 27 deposition attributed 20-30 drums of wash solvents per shipment, once every 4-6 weeks over 3-4 years. I calculated 50,050 gallons based on these parameters (averaging the parameter where a range was given). Mr. Kohnen 27 deposition testimony attributed 40-60 drums per shipment, once 4- 7or 8 weeks over 2-3 years.⁵¹ I calculated 59,583 gallons based on these parameters. Averaging these two totals, I calculated a volume of 54,817 gallons. Applying the same 80% yield percentage to this volume that I applied to other Generators, I calculated an adjusted volume of 8,223 gallons, resulting in a Generator allocation percentage of 1.65% after incorporating the per capita component. If the Generator party orphan share is eliminated, the calculated percentage is 2.00%.

2. Moran Paint Company

This facility was cited as having sent wash solvents, flushing from mills and paint thinners to the Site. Exhibit 7 of Mr. Kohnen's Rule 27 deposition attributed one tanker load (5,000-6,000 gallons) per shipment, once every 5-6 weeks over 5-6 years. Mr. Kohnen's Administrative deposition testimony attributed the shipments as occurring once a month.⁵² I calculated a volume of 363,000 gallons from the Administrative deposition and 286,000 gallons from Exhibit 7. His Rule 27 deposition testimony attributed one tanker load (5,000-6,000 gallons) per shipment, once every 5-6 weeks over 3-5 years.⁵³ I calculated 208,000 gallons based on these parameters (averaging the parameter where a range was given). During cross

⁵¹ Kohnen R27 Deposition at pp.389-391.

⁵² Kohnen Adm Deposition at p. 32.

⁵³ Kohnen R27 Deposition at pp.394-395.

examination at Mr. Kohnen's Rule 27 deposition, he indicated that Moran Paint made shipments to the Site for at least five years.⁵⁴ Based on the cross examination, the calculated total from his Rule 27 deposition would have been increased to 260,000 gallons. In order to calculate a volume total, I averaged the totals from Exhibit 7 (286,000 gallons) and his Rule 27 deposition (208,000 gallons) for a total of 247,000 gallons. Applying the same 80% yield percentage to this volume that I applied to other Generators, I calculated an adjusted volume of 38,383 gallons, resulting in a Generator allocation percentage of 6.98% after incorporating the per capita component. If the Generator party orphan share is eliminated, the calculated percentage is 8.41%.

Mr. Brown testified during his Rule 27 deposition that Moran Paint was a large customer of the barrel reconditioning operation, sending between 80-125 drums every 2-3 weeks.⁵⁵ Mr. Brown provided no time frame. For the purpose of attributing a volume from this testimony, I assumed a period of five years. The calculated volume from this testimony is 1,333 gallons. Because there was no time frame indicated in any testimony, I did not include this calculated volume in Moran Paint's total for allocation purposes.

3. NCR

NCR had two locations that were cited as having sent contaminated cleaning solvents to the Site.

For the Cambridge facility, Exhibit 7 of Mr. Kohnen's Rule 27 deposition attributed 10-15 drums per shipment, 2 or 3 times per year over 3-4 years. Mr. Kohnen's Administrative deposition testimony attributed the shipments as occurring twice per year over only 1 year.⁵⁶ I calculated a volume of 1,375 gallons from the Administrative deposition and 6,016 gallons from Exhibit 7. His Rule 27 deposition testimony attributed 5-10 gallons per shipment, once every 5-8 weeks over 1-3 years.⁵⁷ I calculated 6,600 gallons based on these parameters (averaging the parameter where a range was given). In order to calculate a volume total, I averaged the totals from his Administrative deposition, Exhibit 7 and his Rule 27 deposition for a total of 5,580 gallons. Applying the same 80% yield percentage to this volume that I applied to other Generators, I calculated an adjusted volume of 837 gallons.

For the Dayton facility, Exhibit 7 of Mr. Kohnen's Rule 27 deposition attributed 5-10 drums per shipment, 3-4 times per year, over 3-4 years. This calculates to 6,497 gallons based on these parameters (averaging the parameter where a range was given).⁵⁸ Mr. Kohnen's Rule 27 deposition testimony attributed 5-8 or 10 drums per shipment, once every 5-8 weeks over 1-3

⁵⁴ Kohnen R27 Deposition at pp. 899-900, 971.

⁵⁵ Brown R27 Deposition at pp. 112, 127.

⁵⁶ Kohnen Adm Deposition at p. 69.

⁵⁷ Kohnen R27 Deposition at pp. 397-399.

⁵⁸ I based my original calculation on 3-5 drums per shipment – which calculated to 7,425 gallons. I have corrected that parameter for this report.

years.⁵⁹ I calculated 7,700 gallons based on these parameters. Averaging these two totals, calculates to 7,098 gallons. Applying the same 80% yield percentage to this volume that I applied to other Generators, as well as an adjustment for a possible unreliable identification,⁶⁰ I calculate an adjusted volume of 745 gallons,

The sum of the two facilities' adjusted volume came to an adjusted volume of 1,582 gallons, resulting in a Generator allocation percentage of 0.48% after incorporating the per capita component. If the Generator party orphan share is eliminated, the calculated percentage is 0.59%.⁶¹

4. Worthington

This facility was cited as having sent dirty solvents to the Site. Exhibit 7 of Mr. Kohnen's Rule 27 deposition attributed 10-15 drums per shipment, once every 2-3 months over 2-4 years. I calculated 9,900 gallons based on these parameters (averaging the parameter where a range was given). Mr. Kohnen's 27 deposition testimony attributed 8-15 drums per shipment, once 5- 8 weeks over 1-2 years.⁶² I calculated 7,590 gallons based on these parameters. Averaging these two totals, I calculated a volume of 8,745 gallons. Applying the same 80% yield percentage to this volume that I applied to other Generators, I calculated an adjusted volume of 8,223 gallons, resulting in a Generator allocation percentage of 0.43% after incorporating the per capita component. If the Generator party orphan share is eliminated, the calculated percentage is 0.53%.

⁵⁹ Kohnen R27 Deposition at pp. 399-400.

⁶⁰ Mr. Kohnen did not recall drums coming in from the Dayton facility during his administrative deposition. Kohnen Adm Deposition at pp. 68-69. However, he did indicate that this facility was a customer and estimated volumes in Exhibit 7 and his Rule 27 deposition.

⁶¹ My original calculation produced an adjusted volume of 794 gallons and an allocation percentage of 0.49% (0.60% with orphan share percentages eliminated).

⁶² Kohnen R27 Deposition at pp. 453-454.